Ontario Provincial Parks Landscape Design Principles And Guidelines

Ontario
Ministry of Natural Resources
Hon. James A. C. Auld
Minister
Dr. J. K. Reynolds
Deputy Minister

ONTARIO PROVINCIAL PARKS LANDSCAPE DESIGN PRINCIPLES AND GUIDELINES

Parks and Recreational Areas Branch
Outdoor Recreation Group

February 1980

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CONTENTS

FOREWORD

The purpose of this document is to aid all staff involved in the planning, development and operation of provincial parks in the understanding and application of some of the basic principles used in park design. It is not intended as a field book of construction drawings or as a substitute for good design. The principles described are fundamental ideas; the guidelines are recommended approaches to recurrent problems.

The purpose of guidelines is to identify the range of acceptable design approaches within the administration policies of the parks system. Because each site is different from all others, the guidelines are not instant answers to be applied outside the framework of specific planning or design projects. It is the purpose of design, after considering the characteristics of a given site and the programme of requirements for that site, to find an appropriate solution within the range established by the guidelines. In general, the guidelines are most reliable where recreation depends on facility development, least reliable where development plays only a small part.

The principles and guidelines in this document are classified according to activity because the facilities provided in parks are the means for achieving specific activity objectives. Recreational activities are considered first followed by the service or supporting activities in Section V. These principles and guidelines will be periodically revised. Suggestions are invited on a continuing basis and should be sent to the Director,

Provincial Parks Branch
Outdoor Recreation

Guidelines for trails are being prepared separately in conjunction with the trails programme.

BEACH ACTIVITIES

Facility: Dry Beach
Wet Beach

Principles:

The purpose of a specially developed beach area either for day-users or campers is to provide an area suitable for swimming, sunning and sitting. Sand beaches are generally preferred because the gentle slope into the water provides safe conditions for children and space for just being in or near the water. Many experienced swimmers prefer a rocky shore without the nuisance of sand and grit when getting in and out of the water. However, swimming itself is not the overriding consideration. Sunning, waterplay, sitting and watching are important activities associated with a beach area.

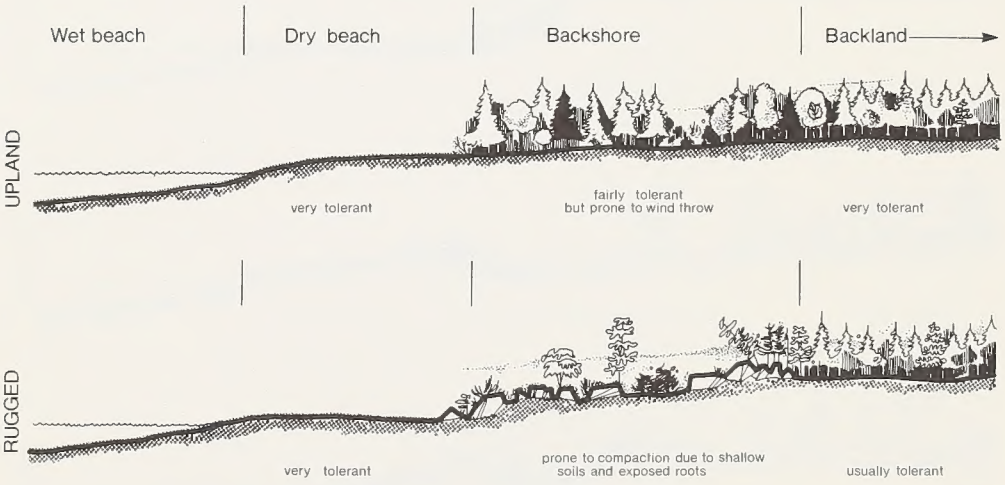
Natural sand beaches arise from specific conditions including the soil on site, water currents, exposure to winds, etc. The sand is not covered with vegetation because it is constantly subject to disturbance. It is the area between the water's edge and the limit of vegetation growth that absorbs the energy of the waves during storm conditions. Sand beaches are often associated with swampy backlands that restrict access and recreation development. Creating a sand beach where one does not naturally exist presents restrictions which must be considered on an individual site basis to determine if it is feasible, or even desirable, to change existing natural conditions. Where a natural beach exists, care must be taken to protect the vegetation edge in order to prevent erosion and eventual destruction of recreationally important back shore.

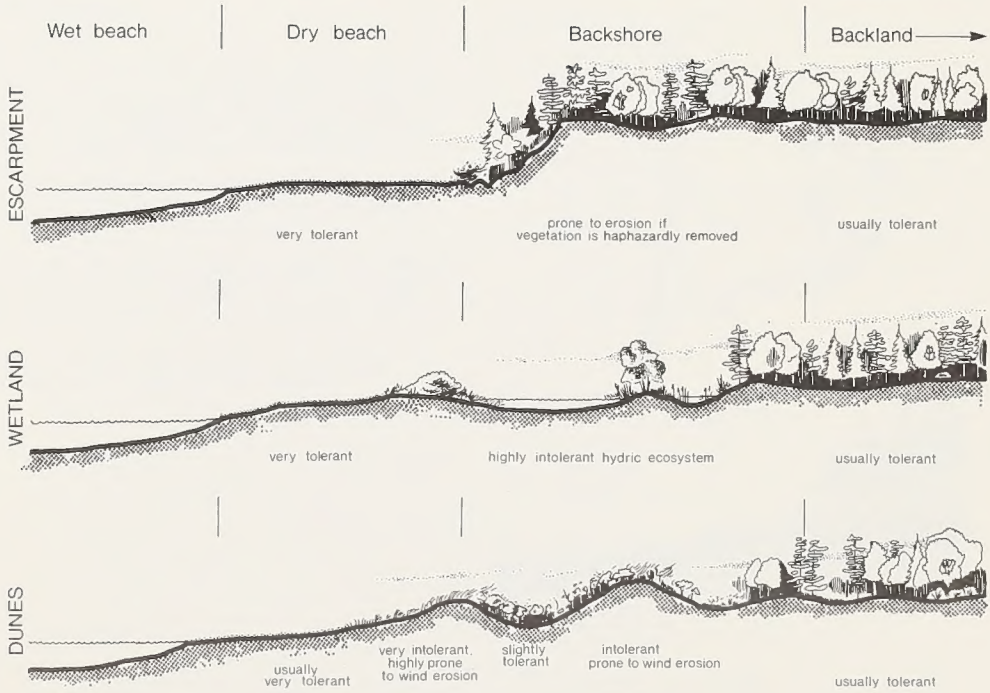
A beach should be exposed to the sun for as much of the day as possible. East, south and west facing orientations are preferred. The beach should be situated so that the prevailing winds blow toward the shore, drawing in the warmed surface water toward the bathing area and creating sufficient breeze to discourage flying insects. Water quality studies may be required before considering recreation development.

PRINCIPLES

– in a beach area swimming, bathing, sunning, waterplay, watching and sitting are the important activities.
– sand beaches are preferred for safety; however, experienced swimmers and divers enjoy rocky slopes.

SHORELINE - BEACH CHARACTERISTICS AND TOLERANCE RELATIONSHIPS.




Wet beach
Dry beach
Backshore
Backland
ESCARPMENT
very tolerant
prone to erosion if vegetation is haphazardly removed
usually tolerant
WETLAND
very tolerant
highly intolerant hydric ecosystem
usually tolerant
DUNES
usually very tolerant
very intolerant, highly prone to wind erosion
slightly tolerant
intolerant prone to wind erosion
usually tolerant

GUIDELINES

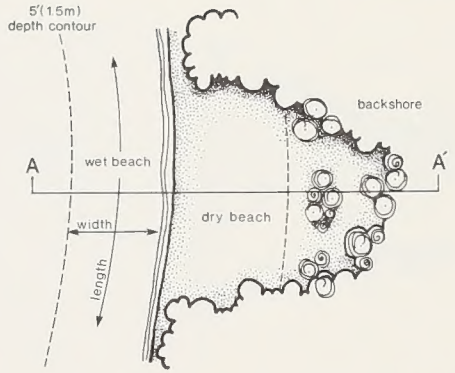
WET BEACH

Wet beach is the water activity area bounded by the water line and the 5'(1.5m) depth contour. This is the depth at which most people are still able to touch bottom. This depth may be varied according to special requirements : eg. children's beach, handicapped use, etc.

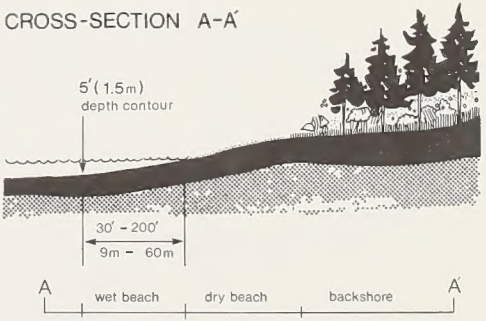
— minimum useful beach width is 30'(9m) shore to the 5'(1.5m) depth contour. A narrower wet beach will have an excessively abrupt slope.

— maximum wet beach width for capacity calculation is 200'(60m) or the distance to the 5'(1.5m) depth contour, whichever comes first, to ensure reasonable travel distance from the shore.

— Bottom material should be firm and free from dangerous obstructions or sharp objects.



CROSS-SECTION A-A'

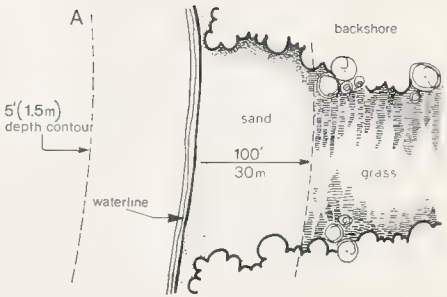


DRY BEACH

Dry beach is the area bounded by the waterline and the backshore edge
— there are two conditions where natural beach exists

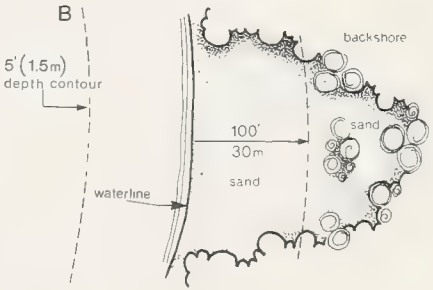
A. SAND AREA LESS THAN 100'(30m) wide

Use 100'(30m) or limit of useable land (well drained, moderate slope 3% to 5%), whichever comes first



B. SAND AREA GREATER THAN 100'(30m) wide

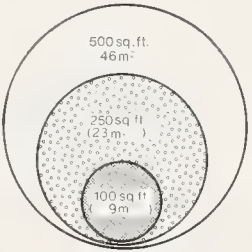
Use 100'(30m) back from water's edge Beach area beyond this line should be counted as backshore



DENSITY

Densities are based on surrounding landform and vegetation constraints, and the user's perception of crowding.

AREA PER PERSON



MEDIUM DENSITY
250 sq.ft.(23m²)
of dry beach per person.

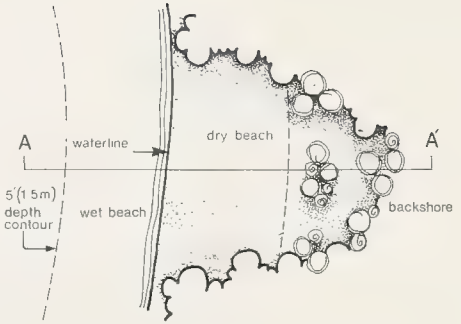
HIGH DENSITY
100 sq ft (9m²)
of dry beach per person

LOW DENSITY
500 sq.ft.(46m²)
dry beach per person.

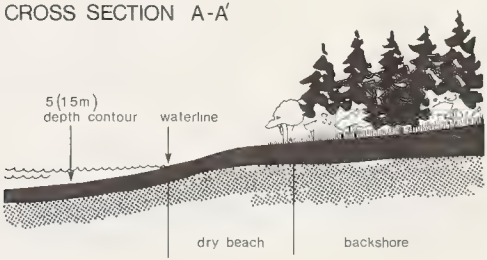
THE CALCULATION OF BEACH AREA FOR CAPACITY ESTIMATES.

SITUATION WHERE NATURAL DRY BEACH EXISTS

- determine the water level, the dividing line between wet and dry beach.
- determine the wet beach (refer to the definition of wet beach)
- determine the dry beach (refer to the definition of dry beach)
- after these areas are mapped a planimeter can be used to compute precise area; otherwise multiply the length of beach by the average width.



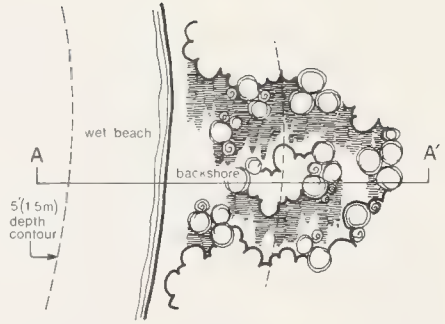
CROSS SECTION A-A'



SITUATIONS WHERE NO NATURAL DRY BEACH EXISTS BUT WHERE WET BEACH IS SUITABLE FOR BATHING

A. Wet beach calculation is the same as that for the previous example.

B In this case, the vegetation may grow to the waters edge The grassed or potentially grassed area will be the area that substitutes for the open sand beach This backshore may be considered as ending 100'(30m) inland from the vegetation/water's edge although other areas farther inland may still be useful for picnicking purposes and may be used in those calculations of capacity Ideally, the actual open area within the described limits should be mapped to scale and measured by planimeter or dot grid. Where such precise measurement is not required, measure the grass area immediately behind useable wet beach between the water's edge and up to 100'(30m) inland. Subtract all areas which have drainage problems, such as slopes exceeding 5%, making allowance to leave selected groups of trees and shrubs to arrive at an area estimate.



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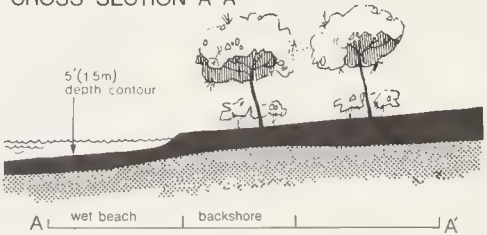


PROPORTION OF WET TO DRY BEACH

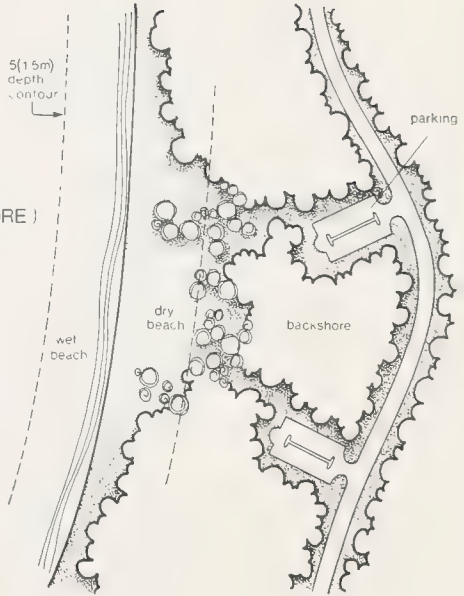
Ideally the areas of wet and dry beach should be equal. For capacity calculations, use the smaller of the two areas if they are not equal.

BACKSHORE

Backshore is the area from the inland limit of dry beach back to the limit of useful land (as defined primarily by drainage and slope – less than 5%) or 400' (120m), whichever comes first. The limit 400' (120m) is based upon maximum walking distance. Change houses and utilities will be provided in this backshore area.

TOTAL CAPACITY (INCLUDING BEACH AND BACKSHORE)

If the backshore is to be used for picnicking, the capacity for picnic activity can be calculated as shown in section II. Assume, for example, that the capacity for picnicking in the backshore is 400 people and that the beach capacity figure as described previously is 1000 people. Generally 60% (or other figure depending on actual use) of picnic area users will use the beach at any one time, so 240 people out of the 400 picnickers should be included in the 1000 beach users. The net capacity added by the picnic area is 160. Total capacity will be 1000+160=1160. Assuming 3.5 people in one car, 330 parking spaces should be provided for the whole area, and placed on the backshore.



PICNICKING

Facilities: Picnic Area
Picnic Sites
Related Services

Principles:

Picnicking is less rigid in its developed facility requirements than many common recreational activities. Access (by car or other means), a picnic table, a fireplace grill or barbecue, shade, water and toilet facilities and open play space are the basic necessities, but their arrangement depends on particular site conditions. Garbage disposal facilities may be provided at each site or in a central service location. Special picnic areas may be developed separate from other day-use facilities or in combination with them.

Where the dominant day-use attraction is a beach, parking facilities may be combined, giving access to both beach use and picnicking. The beach, however, should be kept clear of tables and fire grills. A shaded, grassed area immediately behind the beach and in front of and between parking access locations will provide for picnic use and offer an alternative to those who do not wish to sit continually in the hot sun on the beach. Particularly in natural environment parks, picnic areas should not be concentrated, but should be dispersed with small parking areas giving access to groups of picnic tables. Picnic sites are developed; they do not consist of randomly placed facilities. There should always be a clear distinction between the picnic area with its well maintained turf and groups of trees with the surrounding buffer areas. This distinction is important, for when the buffer areas are deliberately left undisturbed, maintenance can be concentrated on the actual use areas where it is needed. A good example of deliberate application of such distinct maintenance techniques is the golf course with its greens, fairways and rough. An open, grassed area suitable for unstructured games (ball playing, frisbee, etc.) should be associated with the picnicking units. Play structures or materials are often a desirable addition, incorporated into the design of the open free play area. Picnic units should not be scattered throughout the area but grouped (still maintaining the designated space between units) and always associated with "edge" conditions between wooded cover and open clearing. People tend to use such corners and coves where they are sheltered yet close to the open sunny areas. They tend to avoid both dense bush and exposed locations. Selective landscape treatment (thinning and planting) should be used to guide pedestrian traffic, to screen picnic units for privacy, to open views and to protect users from storms, wind and sun.

Picnic shelters should be selected on the basis of the expected type of use, i.e. large group or individual family occupancy. The use of shelters should be considered in parks that will not have sufficient shade until recently planted trees have grown to significant size and where frequent rain may be expected.

Picnic areas may serve solely to provide a place to stop and eat, as at an historical site or a roadside rest area, or they may offer eating and sitting places for park visitors seeking other recreational activities such as swimming, hiking or field games.

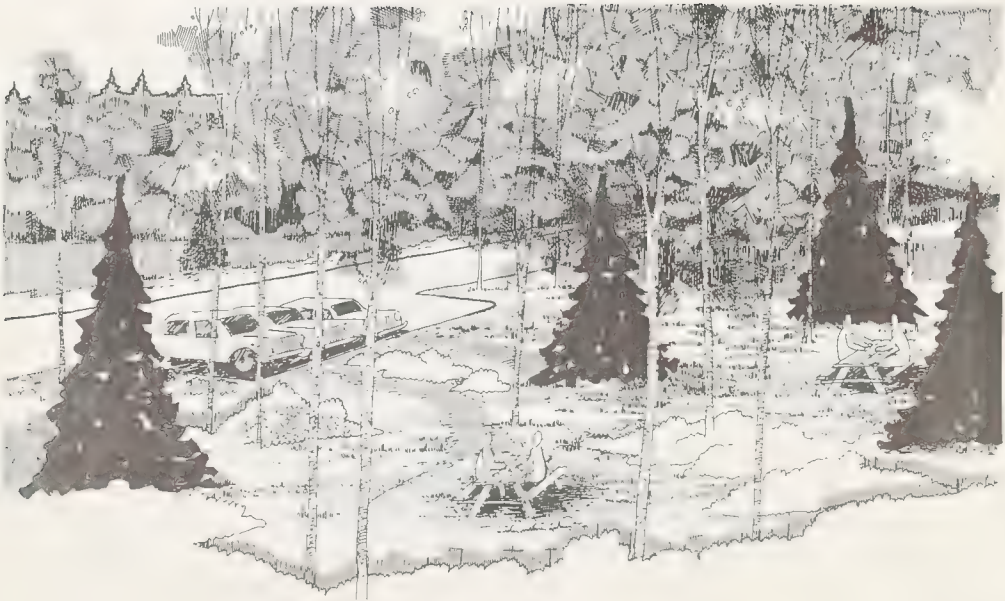
Sites chosen for picnic areas should be reasonably level with a maximum slope of 5%; it should possess deep, well drained soil and stable vegetation cover and be free of poison ivy and dangerous obstructions or hazards such as eroding banks and flood prone areas. Shade covering ten percent of the entire picnic area is considered ideal.

For group picnicking, a specially designated area may be developed or facilities within a regular picnic area may be designed to accommodate infrequent group use. Group picnicking is similar to group camping and day camping in its facility requirements and internal space arrangement. A picnic shelter, however, is a necessity for group picnics. Access to open areas for field games and a place for organized group social activities are needed but often neglected elements of a successful group picnic area.

PRINCIPLES

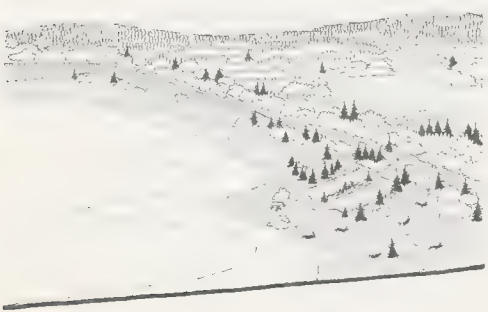
POSSIBLE LOCATIONS

ROADSIDE REST AREA



Picnic areas can be either associated with or separated from the beach activities This option is at times controlled by the physiography of the shoreline.

Combined Facilities
UPLAND
- well drained backshore
- stable, gently rolling backland

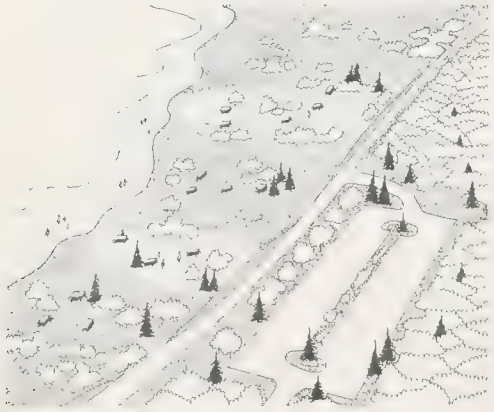


Separate Facilities
ESCARPMENT
- steep but stable backshore.
- well drained plateau backland.

Picnic sites need not be distributed over one extensive area with massive parking facilities, but may be organized into smaller parking units, giving access to groups of picnic tables. These small picnic groupings can at times be worked into the existing vegetation patterns and topographic configurations of the backshore and backland. Buffers (vegetation, berming, etc.) for screening or microclimatic purposes (i.e. protection from strong on-shore winds) and pedestrian access are important considerations.

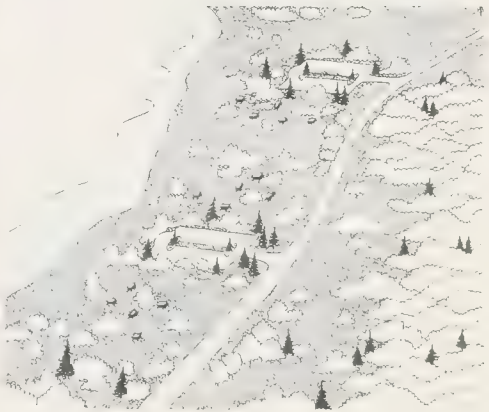
Undesirable

EXTENSIVE PICNIC GROUNDS
– with concentrated parking



Desirable

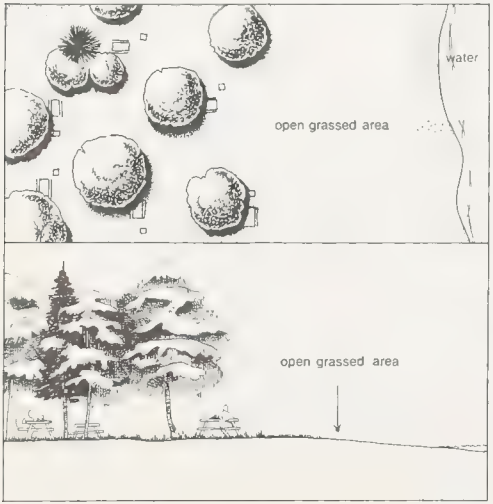
SMALL PICNIC GROUPINGS
– fitted into the lay of the land – easy access, safe.



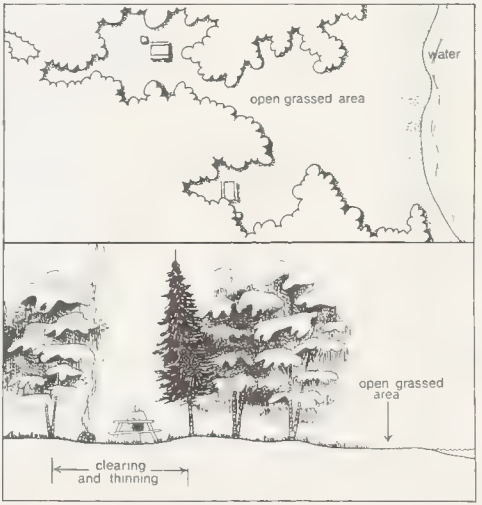
GUIDELINES

FAMILY PICNICKING · The density of picnic sites is directly related to the carrying capacity of the landscape and to the recreational experience required Often recreation parks, because of their higher carrying capacities, can provide higher density picnic grounds. The reverse applies to Natural Environment parks. Walking distance to facilities also varies with density. The lower range of reasonable walking distance should be used in Recreation parks and the upper range in Natural Environment parks

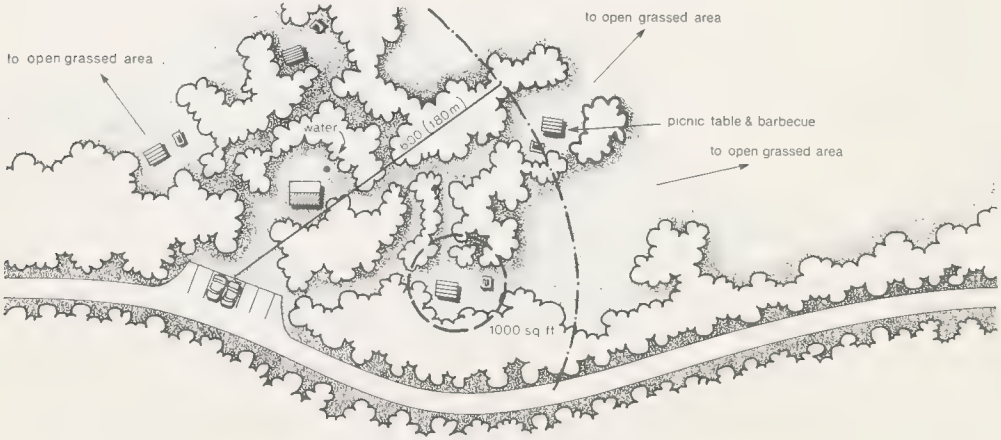
Recreation park 4-8 units acre desirable
Open field with large shade tree specimens.
Min distance to parking area - 150' from edge of parking.
Maximum distance to toilet facilities - 600'.



Natural Environment park : 2-4 units acre desirable.
Wooded areas, usually clearings have to be created
Maximum distance to parking and toilet facilities - 600'



- generally 1000 sq ft of area is allotted to each unit consisting of a picnic table Barbecue facilities and garbage receptacles may be included with each unit or placed in a central location
- distance between units = minimum of 100 ft (30m) desirable (Recreation park), 150 ft (45m) (Natural Environment park)
- distance from automobile = 600 ft (180m) maximum walking distance
- distance from toilets = 600 ft (180m) maximum walking distance
- number of units per acre – Recreation park 4-8 desirable.
  Natural Environment park : 2-4 desirable.
- an open, grassed area suitable for unstructured games (ball playing, frisbee, etc) should be associated with the picnicking units A play area with facilities may also be provided
- picnic shelters should be selected on the basis of the expected type of use, ie. large group or individual family occupancy.



CAMPING

Facilities: Family campsites – Campsites of four types
- car campsite
- boat-in campsite
- walk-in campsite
- interior campsite

Principles: Group campsite Areas

For car camping, vehicle access is provided adjacent to the campsite. The facility elements for car camping are essentially the same whether a tent, tent-trailer, trailer, motor home or camper-back is the recreational shelter used. Campsite spacing, density of development and the level of servicing in car campgrounds will vary depending on:

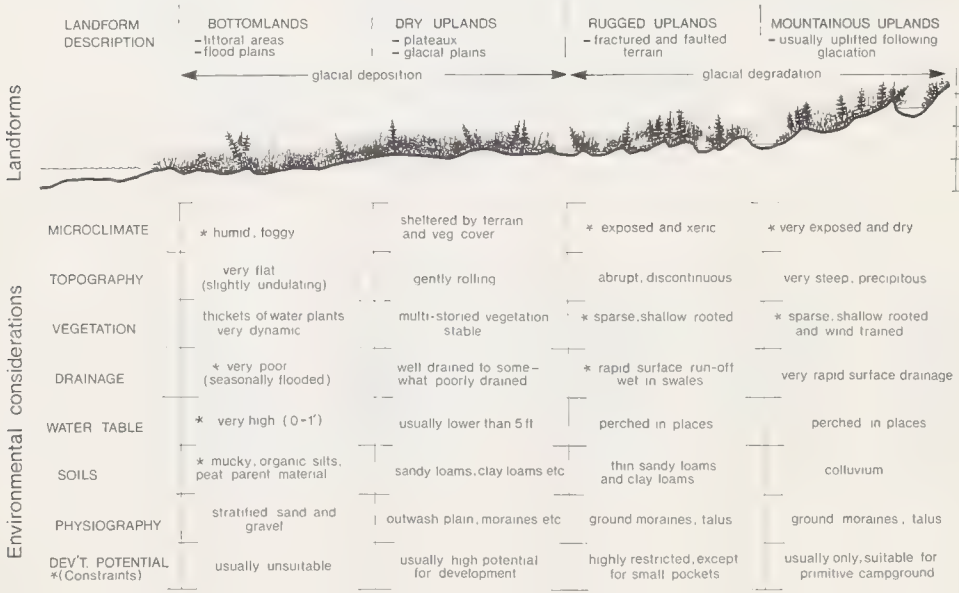
1. environmental considerations of the site
2. type of experience to be provided related to the park classification
3. economic considerations

Camping provides overnight facilities for park visitors, giving them a base from which they can participate in the other recreational activities. Camping requires more than campsite development. The basic needs for good camping are: access to recreation opportunities and safety, privacy and convenience at the campsite.

Camping may be either short-stay, stopover camping (primarily for accommodation) or destination camping (primarily for recreation). Camping, especially car camping, generally requires more service development than day-use activities as well as special provision for registration and security.

PRINCIPLES

Environmental considerations of a specific site are usually the ultimate determinants of density and physical layout of a campground The composition of a landscape is strongly controlled by landform and vegetation. It follows then, that any campground design should be accompanied by detailed evaluations of the terrain (landform) and vegetation structure.



VEGETATION STRUCTURE Campground densities relate to the present stage of vegetative growth, and any adaptations to changes in site ecology.

Typical vegetation succession on dry upland in deciduous forest, Southern Ontario

Old field / very open	Primary succession	Young forest	Mature forest	Climax forest
– Pioneering seedlings	– Dense thickets of shrubs and saplings	– Upper story developing	– 3 tiered forest strata	– Single story development
	– Herb layer reduced	– Dense shrub layer	– Mature trees (80 ht.)	– Closed canopy
		– Herb layer still reduced	– Young trees (40 ht.)	– Open understory
			– Sparse shrub layer	– Thick forest litter
			– Good herb layer	

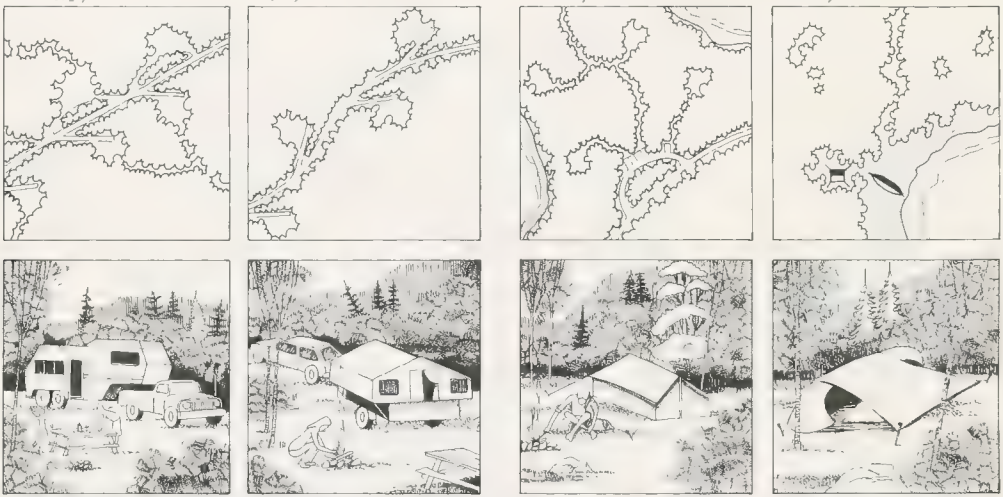
Campground development adaptations

– Planting to screen construction of campground roads	– Enhance tree growth by reducing competation by shrubs	– Selectively cut large canopy trees	– Selectively remove diseased or damaged trees, taking precautions against wind throw	
			– Remove small canopy trees	– Allow for understory regeneration

Vegetation tolerance decreasing ——————————→

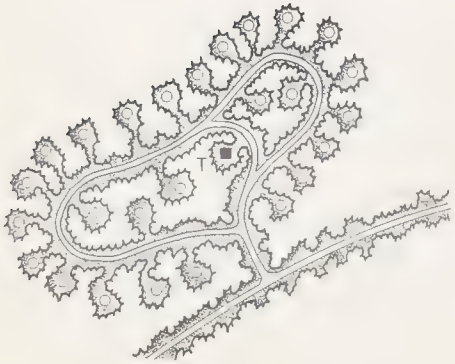
Initial density increasing ——————→ ← ——— Initial density increasing ———

The layout of a campground and its facilities are strong determinants of camping experience Camping can be private or social, secluded or crowded, primitive or sophisticated, rigorous or relaxing.



In denser development, service facilities are generally more economical to build For example, the per camp_ site cost of toilet facilities (T) in figure A will be less than in figure B. In situation A, a higher quality facility may be justified.

A



B.

Guidelines: Family Campsites — Car campsites

A car campsite consists of three distinct areas:

1. the parking space
2. the developed activity area
3. buffer and screening from the road and adjacent campsites

The minimum activity area required is 3,000 square feet (an area about 65 feet across) to provide space for a sleeping tent, a kitchen tent, a horizontal post for drying sleeping bags, etc., a fire area and an active recreation space.

Each site should be selectively thinned when built in forested areas, to leave trees within the activity area and both trees and shrub undergrowth as screening outside the activity area. The reinforced activity area may be surfaced with turf grass, leaf or bark litter, wood chips or sand depending upon site conditions. Coarse gravel should not be used, and every attempt should be made to avoid drastic grade changes or compaction over tree roots.

Single campsites are designed for a desirable maximum of six persons (one "family"). In cases where user demand justifies, double sites (two parking spaces and two activity areas adjacent) may be provided in campground designs. Because a trailer has its door on the right-hand side, sufficient sites on the right side of a one way campground loop can usually be reserved for trailers, especially where pre-registration is used. Pull-through campsites may be considered in areas where large motor homes and trailers are frequently used, particularly in areas designed for overnight accommodation along highways and in intensively used recreation park campgrounds.

Additional vehicle parking should be provided in campgrounds where user demand justifies. Ideally, visitors should be parked outside the campground near the campground control office. Second car parking for campers may be provided either near the control office or in designated parking areas off the two way campground roads, preferably not on the one way campground loop roads. There should be no more than one vehicle at each campsite parking space.

Play areas are considered desirable in campgrounds. Provision of such facilities depends upon specific site conditions and user demand.

For control purposes and to minimize disturbance to campers, campgrounds should always be separate from day-use areas. Wherever possible, the campground should have its own beach and boat launch areas.

A trailer dumping station should be provided on the way out of the campground or out of the park. The location will generally be inside the area controlled by a registration office except where no suitable site can be found or where the dumping station is deliberately designed to serve users from outside the park, such as those from Crown land recreation areas.

Toilet facilities and convenience services will be supplied at a level consistent with the type of experience to be offered in the park as described in Section V on services.

GUIDELINES

FAMILY CAMPSITES

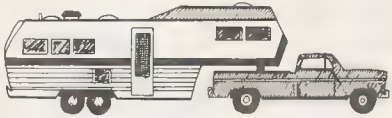
CAR CAMPSITES

SHELTER TYPES

- tent

- tent trailer

- travel trailer
- door on right hand side

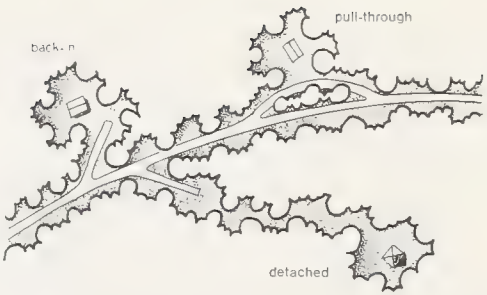


- motor home or van
- door on right hand side

- camper/pick-up or camper back
- door at back

CAMPSITE TYPES

- attached campsite adjacent to parking area (back-in or pull-through)
- detached campsite linked to the parking spur by a trail



CAMPGROUND ROAD

Road Alignment Aesthethic Considerations

- strengthen the natural landscape features
- avoid monotonous layout

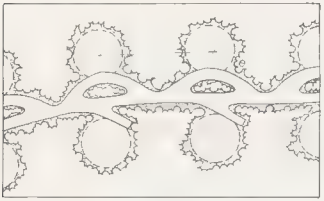
Safety Considerations

- corners selectively cleared for safe sight distance

CAMPSITE SPACING

Pull-through site

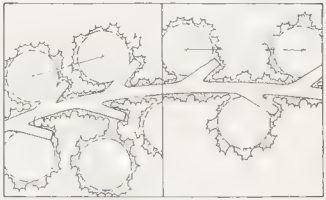
Recreation



Pull-through sites are useful only on the right hand side of a one way road – trailer door opens right side only

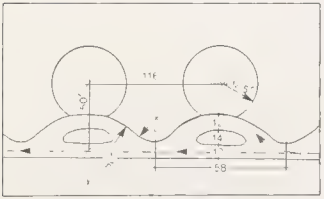
Back-in sites (attached or detached)

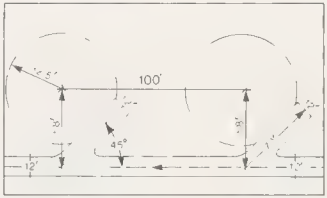
Recreation Natural Environment



Detached and double campsites may be used if site conditions and visitor use require them

Walk-in / Boat-in sites



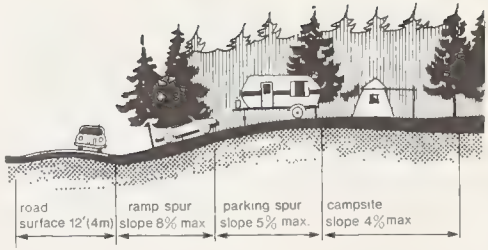


- For tents only
- Site separated from parking area
- Access by trail
- Minimum distance apart (centre to centre) 150ft (45m)

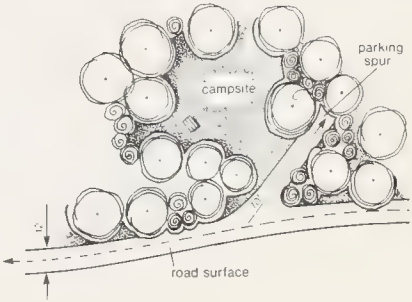
✱ Circle outlines designate campsite areas to be thinned and selectively cleared

CAMPSITE LAYOUT

- Slope on campsite not to exceed 4%
- Slope on the parking spur not to exceed 5%
- The ramp to have a maximum slope of 8%
- The road surface to be 12'(4m) wide.



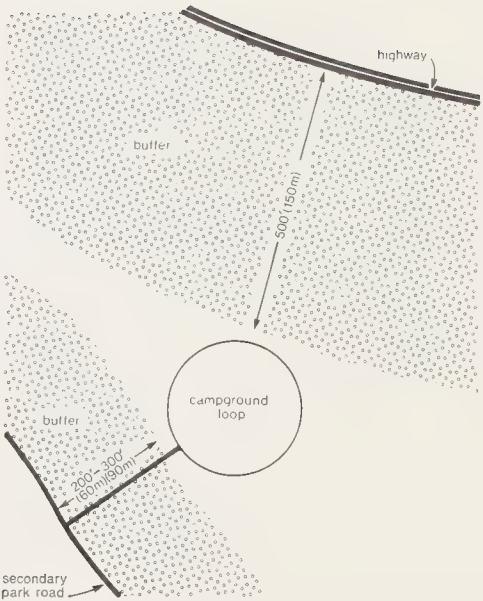
- The parking spur to be a minimum of 70' in length measured along the centre line from the back to the centre of road.
  This length of spur allows use by all vehicle types and screens the vehicle from the campground road.



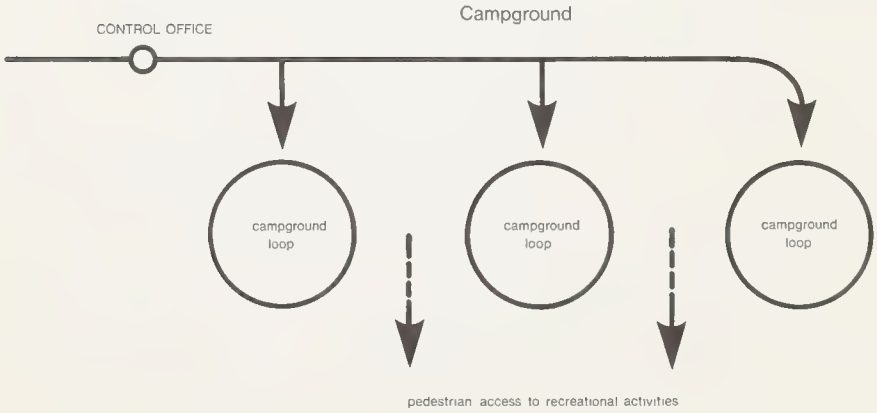
A buffer area at least 500'(150m) wide, measured from pavement edge, should screen a campground from a major road is desirable.

A buffer of 200'(60m) to 300'(90m) is desirable to screen a campground from a secondary park road.

Exact distances used will depend on actual site conditions, such as type of vegetation cover and volume of traffic on adjacent roads.



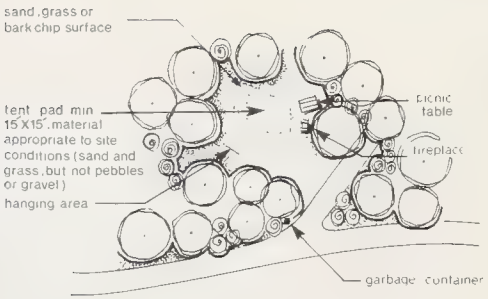
– 125 sites/campground loop road is the maximum number
– sites per campground with one entrance control or registration office = maximum 450 sites.
minimum 125 sites.



CAMPGROUND FACILITIES

Within Campsite
- tent pad
- picnic table
- fire place
- garbage container
- electrical outlets
- hanging area for sleeping bags
- permit post

(All these facilities will not necessarily be provided in every campground)



Within Campground loop
- comfort station is to be within 600'(180m) of 80% of all campsites to be served
- vault privies are to be within 300'(90m) walking distance of 80% of the campsites to be served (250 is the maximum walking distance for night)
- water sources to be provided
- central garbage service
- open play space

(Above comment applies also)

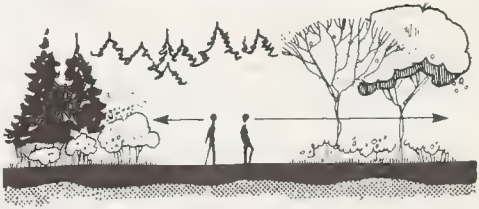
Natural Environment Campsite

CAMPGROUND PLANTING

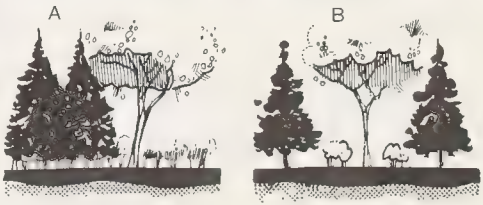
Principles

–provide privacy from adjacent campsites and roads.

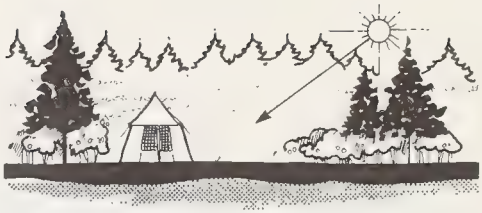
–use vegetation to block views or to define views.



–clump (as in A) similar species, for a natural character, rather than scattering (as in B). Also when planting, it is important to place a few individual trees inside the campside clearing.

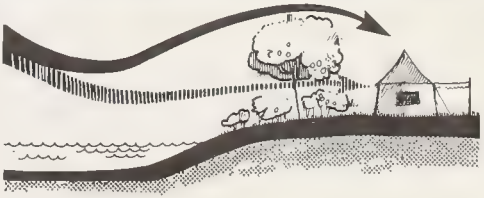


–allow early morning sun to warm the campsite.

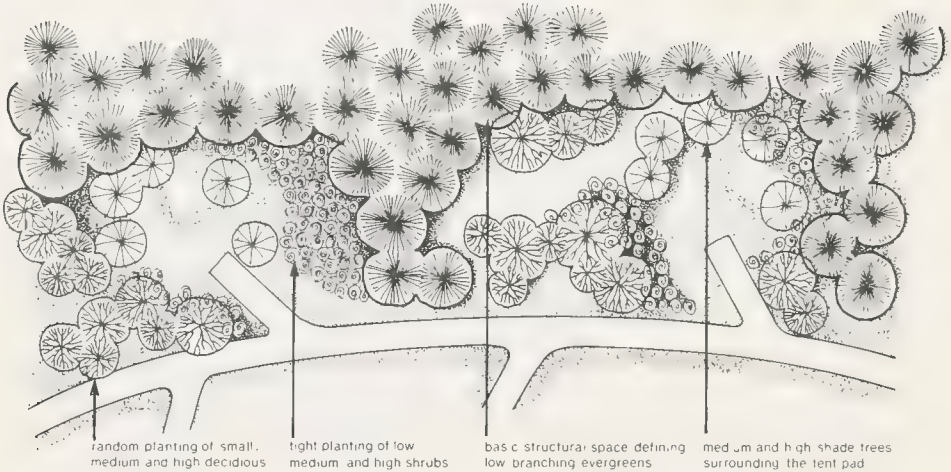


–provide late morning and afternoon shade.

–provide shelter from lake breezes and prevailing winds. Maintain, enough circulation to discourage insects.



Open area, where extensive planting is necessary.
Conceptual planting.



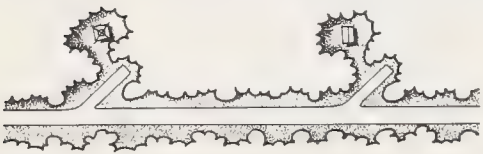
Natural undergrowth is important to the life system of the forest. It prevents excessive pedestrian use in areas that would otherwise be trampled, and it provides acoustical and visual screening as well as a filter against road dust. No brushing should take place unless indicated on an approved site plan or by the landscape architect on site.

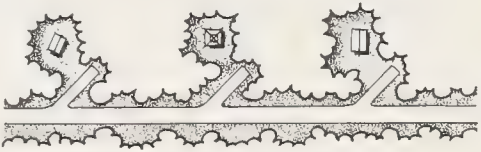
In poorly vegetated areas, dense planting of low, medium and high shrubs adjacent to the reinforced area of the site is recommended. Only native plant materials are recommended for permanent plantings in Natural Environment Parks. Non-native species may be considered in Recreation Parks.

In conifer forest areas with poorly developed or no undergrowth, wider spacing of campsites must be used to provide proper distance between users and to minimize damage to vegetation. In areas with hardwood forest cover and well developed understory, closer spacing may be considered.

In conifer forest areas with poorly developed or no undergrowth maximum spacing must be used to provide proper perceptual distance between users and to minimize damage to vegetation.

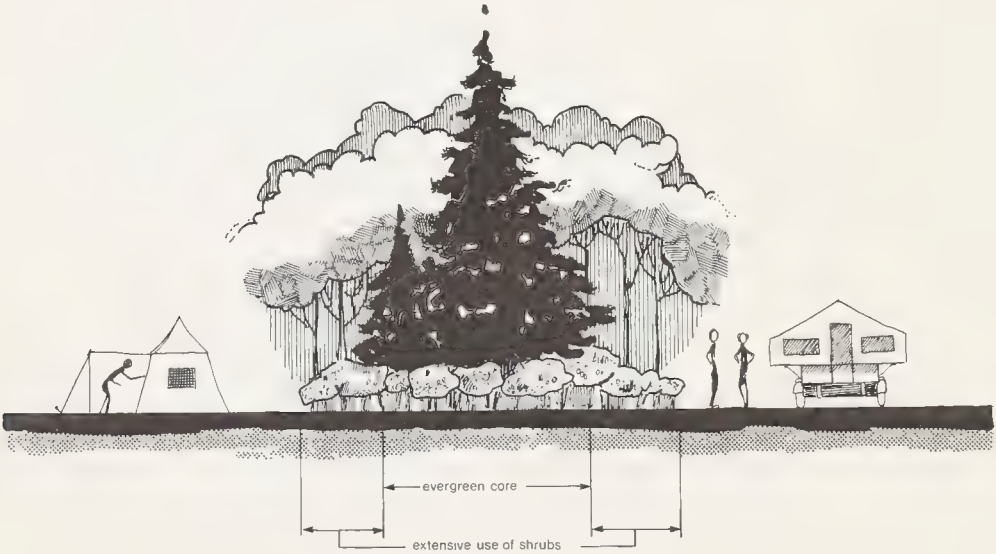
In areas with hardwood forest cover and well developed understory spacing approaching the minimum may be considered.





Planting used as a buffer

– if space is limited, use only the centre portion of evergreens and shrubs.



Guidelines: Family Campsites — Walk-in and Boat-in Camping

Walk-in and boat-in campsites are similar in most respects to the car campsite, but the form of access and density of development differ. The density of development should be one site per acre or less. Sites should be spaced at least 150 feet apart centre to centre distance. A walk-in campsite may have an individual parking spur and a trail leading to the site or a group parking area for several sites and system of access trails. A similar group landing situation could occur for boat-in sites, but only rarely. Because of the low density and the type of experience offered, services are different and less intensive than those provided for car camping. Boat-in sites may have a small dock or merely a place to pull a boat on shore. Walk-in and boat-in sites are designed for tents only. Highly serviced boat-in sites may in the future be provided in parks on major waterways where such use is compatible with park objectives. Such developments are more akin to car camping, the only essential difference being that the vehicle is a boat. Garbage disposal, sanitation services, picnic tables and potable water supply will be considered at the time when such development is anticipated in the provincial park system.

BOAT-IN CAMPSITES

Boat-in sites may have a small dock or merely a place to pull a boat on shore. Boat-in and walk-in sites are designed for tents only

Guidelines: Family Campsites -- Interior Campsites

This type of campsite has no motor vehicle access and is located along or convenient to either a hiking trail or a canoe route. Because of the type of user experience expected, spacing should be such that sites are out of sight from each other and sounds from one site do not disturb campers on another. Sites should be located on a small side trail or trail loop off the main path of travel. The number of sites developed in any one area depends on the suitability of the land available and the total number of users to be allowed in an area at one time. No campgrounds are developed, only single campsites designed to hold a maximum of three canoe/hiking parties or about nine persons. Interior campsites should be developed and managed to minimize the evidence of man-induced change. Space for tents, a fire circle (with or without grill) and an interior earth pit privy or its equivalent will be provided. Toilet location depends on many factors such as soil type, depth, etc. Toilet facilities should be a minimum of 100 feet from any surface water. More may be necessary.

Because of extremely varied site conditions, interior campsites should be carefully selected on an individual basis. Only indigenous plant materials should be used in development or rehabilitation. Improvised construction by users should not be allowed on interior sites and any developed by previous campers should be removed.

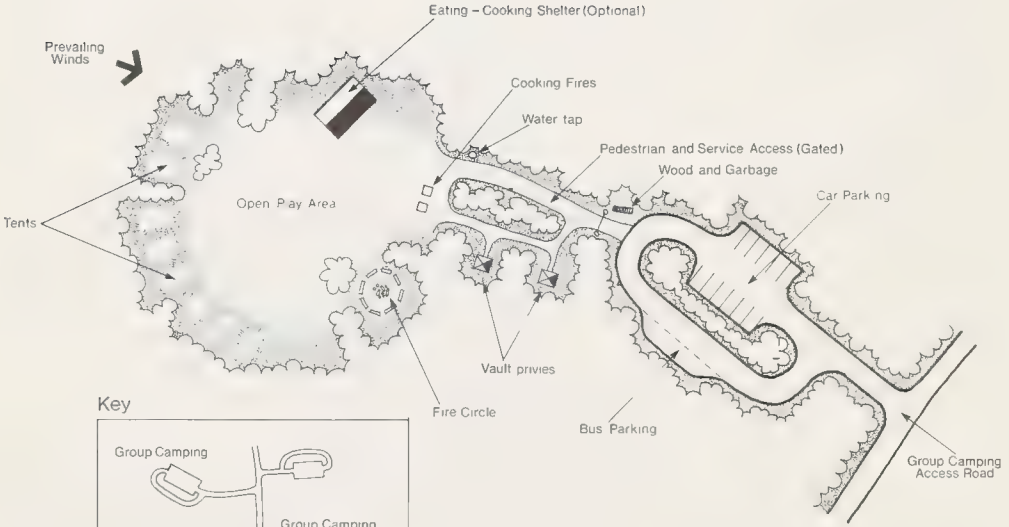
Guidelines: Group Campsites

Camping for organized groups is actually a different activity from "family" camping. The two should be separated to allow group campers to engage in their sometimes noisy activities without disturbing other campers.

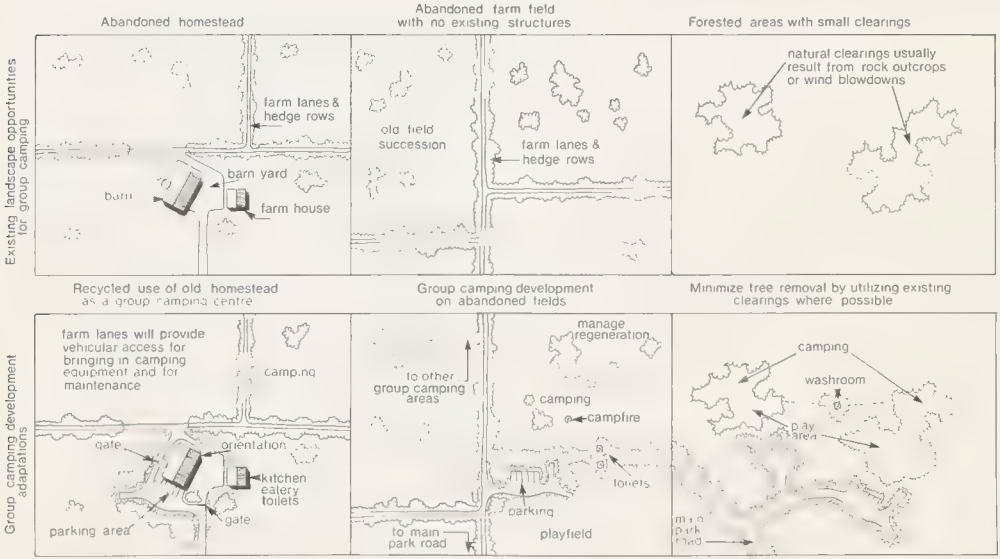
Group campsites of 5 - 10 acres (generally 5 acres) are designed to accommodate an absolute maximum of 100 persons. Groups averaging 50 persons are more common and 50 persons per site is a desirable design maximum unless studies of a specific park indicate a need to accommodate larger groups. Each group campsite should have both car and bus parking and provision for bus turning. Selective clearing and thinning or planting are vital to define areas for sleeping, cooking, active games and a fire circle for gathering and social activities. Basic toilet service (vault privies with wash-basins) and water supply are required.

Day camping for groups is an activity new to provincial parks which will probably acquire greater importance in the future. The facility requirements are similar to those for group camping, except that the "campers" do not stay overnight.

GROUP CAMPSITES



ORGANIZED GROUP CAMPING Group camping activities usually require large open areas. Abandoned farm fields within a park offer ideal spaces for group camping development At times an old homestead can be conveniently utilized as a group camping facility. In forested areas limited clearings (existing or created) can be developed for camping and playing Group camps should have pedestrian linkages to other recreation opportunities, such as swimming and hiking Each group campground should not accommodate more than 100 people, and should range from 5–10 acres in area Each campground should be equipped with the following facilities parking (cars & busses) kitchen shelter (optional), toilet, drinking water, play areas, camp fire circles



BOATING

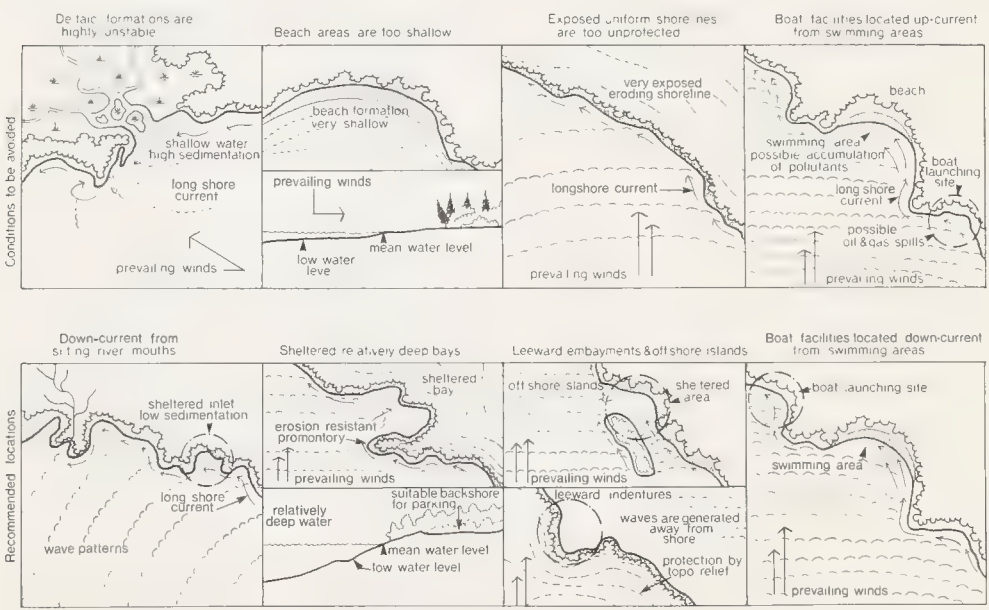
Facility: 1. water area — functional requirements; satisfaction requirements

2. access facilities — parking; launching ramp (optional); turn around; docking (optional)

Principles:

Boating is one of the most complicated activities to standardize; primarily because the facility used is water surface, and lakes and rivers are anything but uniform Factors of depth, pattern or distribution of obstructions such as rocks, biological considerations such as fishing pressure and wildlife habitat protection, wind hazard, and lake shape enter into any assessment of the type and amount of boating use any particular body of water can sustain Lakes on which a park is only one among several uses, present additional difficulties in predicting potential numbers of users. Some estimate is needed, however, in order to determine the secondary service facilities which are required in park planning and development. The functional requirements of motorized boating are more limiting than those of other types. Because each situation is a problem in itself, detailed answers must be based on individual studies for each site. Allowance must also be made for changes dictated by the experiences of management over a period of time. The most reasonable course of action is to provide limited servicing facilities based on the low side of any estimate of use but to allow for expansion should actual use justify

ENVIRONMENTAL CONSIDERATIONS. Locating boat launching and docking facilities entails a detailed study of shoreline geomorphology and microclimate. In general, a good location should have the following characteristics in common: (i) Sheltered from prevailing winds and strong long shore currents (ii) Minor sedimentation or erosion activities (iii) Sufficient depth for potential boat types (iv) Suitable backshore or backland for parking facilities.



Guidelines: Motor Boating

1. Water Area

Closed lakes not connected to other bodies by navigable channels and under 100 acres in area should be managed to exclude motor boats.

Lakes between 100 and 200 acres should have controls on boating speed and number of boats to allow a minimum of 20 acres of water area per boat. A limit of 10 horsepower is suggested as a means of regulating speed. The noise problem and individual lake conditions may limit or eliminate motor boating even when the above area guidelines can be met.

2. Access Facilities

Access facilities (launching ramps, turn-around for launching and parking) will be provided based on the class of park (type of experience being provided), estimates of area allocated to boating, and on the number of users or groups of users that can be assumed to participate in boating activities. Launching ramps will generally provide two lanes maximum, each lane being 12 feet wide. A turning area for the car and boat trailer will be constructed at each launching area. Turn-over rates which affect individual facility capacity can only be gauged by experience. Start small but allow room for expansion. Where a lake can support an increase in boating, it is better to consider adding boat launch facilities in different areas rather than to expand and congest an existing launch area operation at capacity. Ramp slopes of about 10% are desirable to allow the boat to clear the lake bottom while the car is still on dry land.

Launching areas must be separate from swimming areas because of potential pollution and the noise and safety problems they present. A location protected in bad weather is highly desirable. Flat decking on either side of a ramp lane makes loading and unloading of boats easier, but is justified only in intensive use situations.

Parking for cars and boat trailers should be the "pull-through" type where possible, allowing 70 feet as the length of a typical 45° angle pull-through parking space. Where topographic considerations do not permit this type of development, standard parking facilities may be substituted with provisions made so that trailers may be locked to a post, rail or other fixed object, or parallel parked. In this instance, two parking spaces must be alloted, one for the car and one for the boat trailer. Parking must be separate from the immediate launching area, turn around and access road to avoid traffic confusion.

Ramps may or may not be surfaced, depending on use and location. Moveable ramps are desirable where ice, storm and erosion damage are likely to occur.

Where motor boating use is expected to be intensive, separate boat launching areas for day users and campers are desirable. The camper's boat launch area should be within the campground control area, accessible only to campers.

Guidelines. Non-motorized Boating

1. Water Area

Where fishing is the primary attraction for boating, a fisheries management plan should dictate the maximum number of boats permitted and hence the access facilities to be provided. Specific acreage figures are presently so varied as to be meaningless for practical application. The motor boating functional requirements are generally sound but far more boats without motors can crowd a body of water than would ever be tolerated by the users. For any given situation it is better to determine the number of users based on other activities and then to assign a percentage to boating. For canoe tripping, the limiting factor is the number of available campsites, not miles of route. Because much of Ontario's canoe country is rugged and severely limits potential for campsites, accurate figures for numbers of potential users can best be determined by a survey for these areas. From the standpoint of user satisfaction, surveys done in the United States Boundary Waters Canoe Area indicate that the number of encounters with other canoe parties and the size of party are the critical considerations. In order to arrive at an estimate of encounters the actual canoe route network must be mapped.

In an area of restrictive topography where many routes converge on a few portages, the chance of encountering other parties frequently is increased beyond what it would be on routes and portages which are widely dispersed. Rule of thumb "parties per mile" standards provide only for approximate estimates. In assigning arbitrary numbers, they give a false sense of certainty and complicate the problem of estimation.

The following observations should be considered in any assessment of canoe route capacities:

1. When campsite occupancy along a canoe route approaches 60 percent, i.e., when people believe that it will be increasingly difficult to find a campsite for the night, canoeists become increasingly reluctant to travel late in the day. Travel time is effectively reduced to about 50% of what it would be without competition for campsites. Clustering around access areas becomes a problem.
2. The number of transfer points and the awareness of numbers of people at portages and points of conjestion influence canoe route loading capacity.
3. River systems with strong water flow and one-way canoeing have a greater capacity than a stream where there is a two-way flow of traffic.

2. Access

In most natural environment parks and in those recreation areas where motor boating is not provided for, access to the water for small craft is still necessary. Where use is intensive, a single ramp and turning circle or spur may be provided. A special parking area (not pull-through type) may be constructed, but parking for this purpose can often be combined with that for picnicking or other uses if walking distance between parking and the boating area does not exceed 300 feet and the two use areas remain separated.

Where sail boats are expected, it is especially important that overhead hydro lines be kept out of the boating, launching and access areas to avoid electrical hazards. For fixed keel sailing craft a 5 foot draft (unobstructed water depth) is required. Dock or onshore space should be provided for boat tie up. A place from which onlookers may observe boating is desirable.

SERVICE FACILITIES

Facility: Toilet Facilities

Principles:

Toilet facilities are needed in all park development. The minimum amount of service required is fixed by tourist regulations and health codes which must be adhered to and standards set out by the Ministry of Environment. In addition to these technical constraints, there are design requirements relating to the level (simplicity/sophistication) of services, their location and spacing and considerations of their appearance and effect on their surroundings.

Because people will either walk or drive to toilet facilities, the placement of such facilities will influence the traffic pattern of pedestrian and vehicular travel. The maximum desirable walking distance to toilet facilities, is generally considered to be 300' (250' nighttime walking distance). The absolute maximum is 600'. These distances refer to any type of toilet facility. In principle, services which people will use frequently should be close to them and within their immediate location. Those used less frequently may be farther away and in a separate location. In no case should facilities be placed so that pedestrian or vehicular traffic to the facility disrupts the activities of those nearby. For example, if a toilet facility is to serve one campground loop only, it may be located within the loop but if it is to serve two areas it would be best located in a location accessible to both but not within either loop.

Because site conditions vary so widely and affect the type of sewage disposal system which can be used, it is difficult to prescribe exact patterns of servicing outside the context of individual design problems. However, one principle should be emphasized. service activities support the recreational activities but do not dominate them. Service facilities appropriate to these objectives, to specific site conditions and to realistic economic considerations should be chosen accordingly

Facility: Park Roads

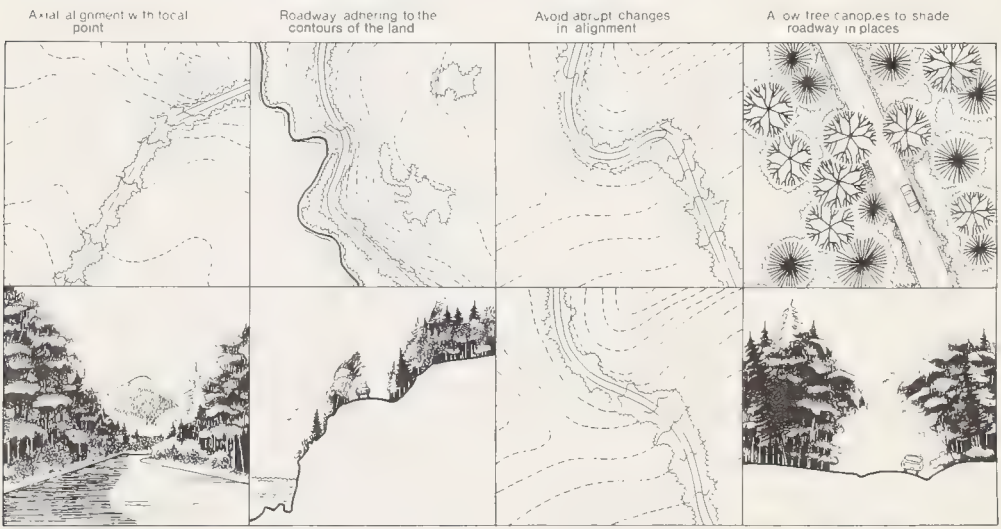
Principles:

Park roads have two main purposes. they provide vehicular access and recreational driving pleasure The attainment of these purposes depends upon the way the road is designed and constructed, especially on the roadside environment, the space through which the road passes The specific horizontal and vertical alignments, width, road surfacing material, and roadside treatment are based upon the requirements of the vehicles used, the speed at which they are intended to travel, the volume of traffic, the nature of the land and environment and the experience provided for. A road which accomplishes its purpose with minimal disruption to the surroundings is the best park road Because the reasons for building any park road are different from those for constructing a highway or county road, the standards for park roads, especially regarding roadside treatment, are different. All construction should aim toward the creation of a natural and visually pleasing appearance.

PRINCIPLES

PARK ROADS, AESTHETIC CONSIDERATIONS

In addition to the pure function of a roadway as a transportation route, park roads must provide for the pleasurable experience of driving The latter largely depends on how the roadway is incorporated into the aesthetic features of the landscape.



Guidelines.

The absolute minimum of land alteration (grading, cuts, fills, drainage pattern changes) should take place consistent with alignment requirements. No more vegetation than absolutely necessary should be removed during road construction. Park roads should not have any "push outs" for tree and trash disposal, nor should borrow pits be allowed within a park except where specifically designated on an approved site plan. All debris should be removed from the site.

In cases where streams or other water courses must be crossed, bridges or culverts should allow adequate head clearance space for canoeists passing through if the crossed water course is likely to have such use. It is desirable that culverts should have their ends tapered to blend flush with the adjacent bank and be placed so that each end lies flat to the stream bed to prevent damming at the upper end and undercutting at the lower. Any culvert used should be sized to allow for anticipated flood conditions without obstructing the flow of water.

Drainage ways associated with roads should have gradually sloped sides (maximum slope 2/1, desirable slope 3/1) and rounded crest and toe to ensure ease of maintenance and a pleasing appearance. A drainage way need not always follow parallel to the road, but can often diverge from it into the bush or adjacent land. When it is necessary to cross a roadway with a culvert, there should be adequate fill between the finished road surface and the top of the culvert.

Park roads should have vegetated shoulders (no loose gravel, bare earth, etc.) A shoulder capable of supporting the weight of a vehicle should be provided on main park roads. For ease of maintenance and for the sake of appearance this should be vegetated (e.g. turf if passing through a turfed area, natural growth and forest leaf litter if in a wooded area). Shoulders are not considered necessary on any but major park or access roads where they are provided solely for emergency pull-off and parking.

In general, all main park roads may be hard surfaced depending upon amount of use they receive and fiscal considerations. Where rail or other barriers are used on the edge of a road or bridge, the ends should be curved away from the road so that the apparent road width is not decreased.

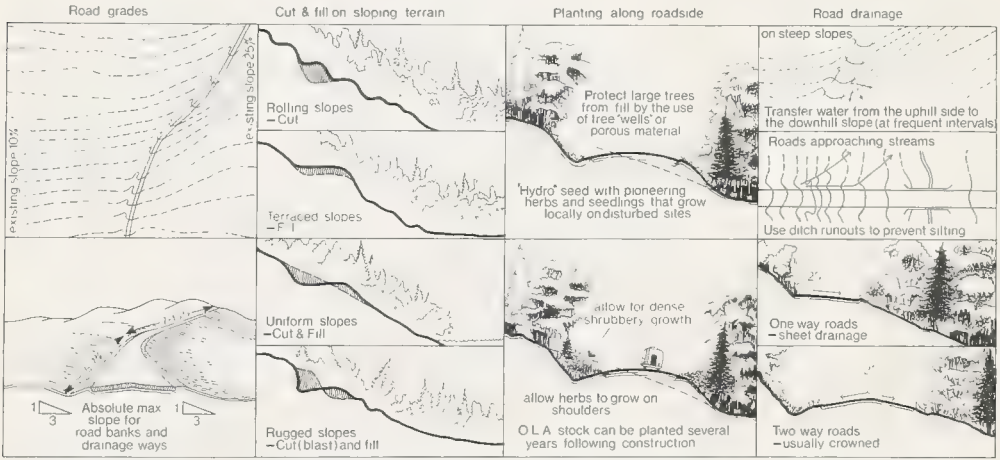
Grades of seven percent are considered a desirable maximum slope on two way roads ("parkway" major and minor park roads, service roads). Ten percent may be allowable for short distances if needed to eliminate excessive grading (i.e. if grading is considered less desirable than the end of achieving seven percent).

Unless otherwise stated, maximum speed is 20 - 25 miles per hour on main roads, 15 miles per hour on campground roads.

GUIDELINES

ROAD GRADING, DRAINAGE AND PLANTING.

The construction of a roadway fulfills the primary objective of the plan, namely the realization of the road, and prepares for the long term management goals: ie minimizing soil erosion, siltation of waterways, road upkeep, control of roadside vegetation etc Although the long range economic consequences of road building are usually ignored, when considered they often reinforce the ecological and aesthetic arguments for road design.



Road gradients should rarely exceed 7%. In certain cases an absolute max of 10% may be allowed for short distances to eliminate expensive earthwork

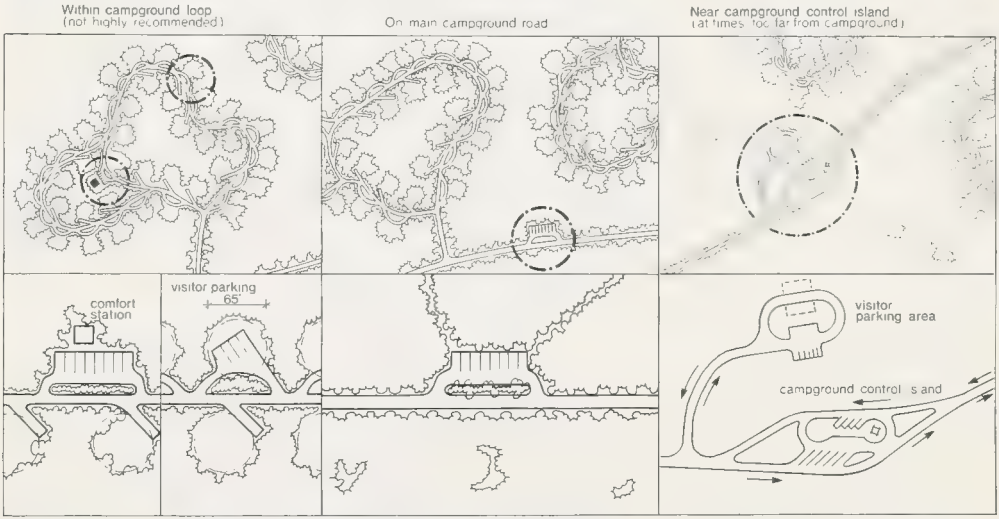
Road sections should adhere to the existing topographic variations for economic, ecologic and aesthetic reasons

Full scale roadside planting should take place after the reworked earth has had a chance to develop its new characteristics (soil drainage etc) -2-3 years for most sites

Grading the roadway for drainage should accomplish the following (i) removal of excess water from road surface (ii) preventing ditch erosion and road washouts (iii) preventing siltation of nearby water bodies

PRINCIPLES

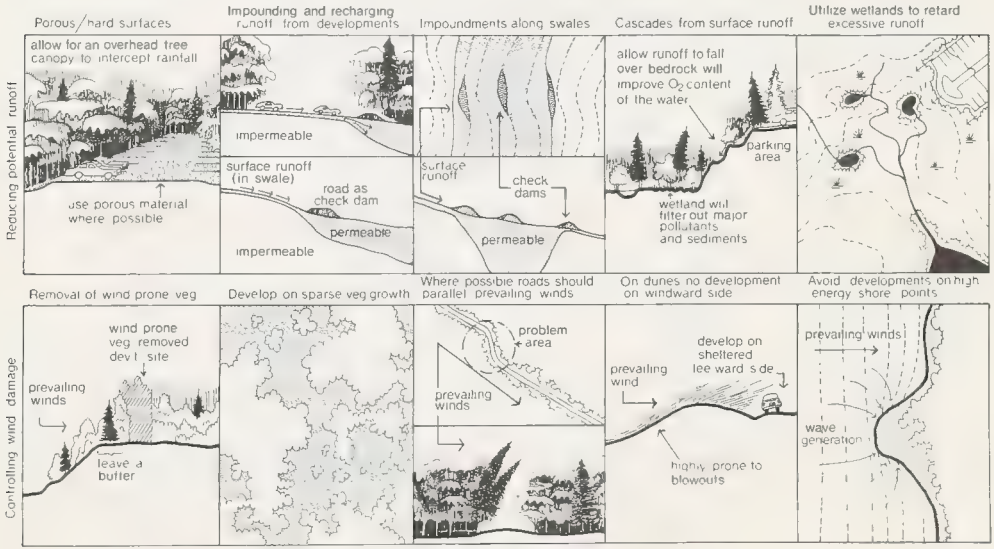
VISITOR PARKING . When siting visitor parking areas the following factors should be considered · increased campground traffic, walking distance, security (vandalism), association with other parking facilities (i.e parking area for comfort station could be expanded to accommodate the required visitor parking space) As a result of varying circumstances,a range of location alternatives are possible



- Associated with other parking facilities
- Temporarily accommodated on designated campsites
- Centralized parking facilities at times associated with other uses
- The reccommended location is immediately before the control office
- The layout of the parking area will vary with local conditions

PRINCIPLES

PREVENTION OF SOIL EROSION AND WIND DAMAGE: Wind and water degradation are two main problems faced in a park development. The precautions that can be taken should only be prescribed after a thorough investigation of the local environmental factors. Since soil erosion and wind damage become highly difficult to control once started, a preventative approach should be taken. In general the greater the permeability of a soil, the less the surface runoff, hence the less potential erosion. The challenge is to reduce the potential surface runoff from a development. Wind damage is generally dependent upon the structure of vegetation cover and exposure.

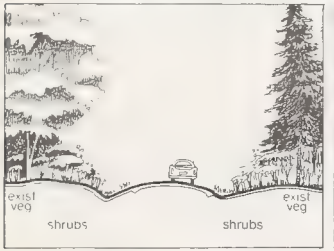


PRINCIPLES

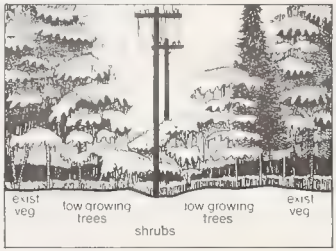
VEGETATION MANAGEMENT · Vegetation should be managed in a "natural" inexpensive manner Where low growth is desired, such as on roadsides and under utility lines, relatively stable shrublands may be created by arresting "succession" through the controlled use of herbicides Understory growth may be enhanced by improving the light conditions in a forest The growth of woody plants in an "old field" may be aided by periodic burning Management practices employing herbicides or fire are highly specialized and must be skillfully applied

Establishment of a shrub/small tree climax for low maintenance

Road sides

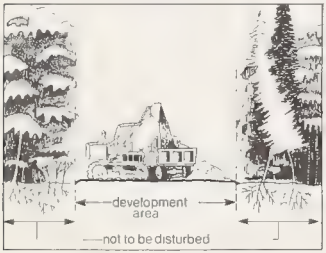


Utility easements

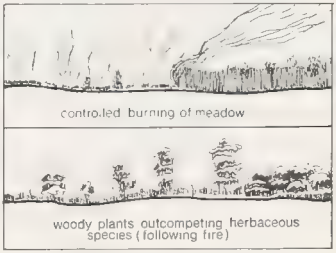


Removal of forest litter to regenerate understory in a climax forest vegetation

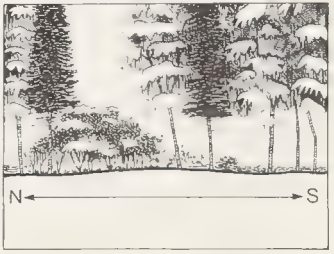
On construction sites insure that tree roots are not damaged



Periodic burning to retard herbaceous competition will enhance woody growth in a meadow



Opening up closed canopies can quickly regenerate (1-2 years) the understory for screening and other purposes



FURTHER REFERENCES.

The work presented in this document was largely based upon the general practice of the Site Planning Section of the Ministry of Natural Resources. The theoretical background of this practise is information adapted from Parks Canada and U.S. state parks over a ten year period of design application in Ontario's provincial parks. The present document is derived from an earlier, unpublished work sheet: "Provincial Park Development Standards – 1970" by I. Olcay for the former Department of Lands and Forests.

The following references contain more detailed information on various, related aspects of landscape design and construction.

Carpenter, J.D., editor. Handbook of Landscape Architectural Construction. McLean, Va: The Landscape Architecture Foundation, 1976
A detailed technical reference book similar in format to Architectural Graphic Standards.

Carpenter, P., Walker T., Lanphear, F. Plants in the Landscape. San Francisco: W.H. Freeman and Company, 1975.
A recent general work covering design, planting and maintenance in one book.

McHarg, Ian. Design with Nature. Garden City, New York: Doubleday, 1971
An explanation of the relationships between development and the processes of nature.

Munson, Albe E. Construction Design for Landscape Architects. New York: McGraw-Hill, 1974.
A concise but thorough course in the construction aspects of landscape design.

Parker, H., MacGuire, J.W. Simplified Site Engineering for Architects and Builders. New York. Wiley-Interscience, 1954.
A useful basic reference, particularly for the technical aspects of building siting, servicing and access.

Rutledge, Albert J. Anatomy of a Park. New York: McGraw-Hill, 1971.
Relating mainly to municipal parks, this book explains the process of park design from the formulation of requirements through construction and maintenance.

Way, Douglas S. Terrain Analysis, a guide to site selection using aerial photographic interpretation. Stroudsburg, Pa: Dowden, Hutchinson and Ross, Inc., 1973.
This reference explains the connection between land forms and development constraints and capability. Stero pairs of aerial photographs are included in the illustrations.

ADDENDUM : Metric Conversions

Page	Imperial Measurement	and	Approximate Metric Equivalent
2.5	145'		45 m
	600'		180 m
	4 - 8 units/ac		10 - 20 units/ha
	2 - 4 units/ac		5 - 10 units/ha
2.6	1000 sq. ft.		92 m^2
	4 - 8 units/ac		10 - 20 units/ha
	2 - 4 units/ac		5 - 10 units/ha
3.2	1000'		305 m
	2000'		610 m
	3000'		915 m
3.3	20'		6 m
	40'		12 m
	60'		18 m
	80'		24 m
3.6	3000 sq. ft.		280 m^2
	65'		20 m
3.9	50'		15 m
	116'		35 m
	28'		9 m
	32.5'		10 m
	12'		4 m
	14'		4.5 m
	58'		17.5 m
	100'		30 m
	70'		21 m

Page	Imperial Measurement	and	Approximate Metric Equivalent
3.10	70'		21 m
3.13	TENTPAD 15' x 15'		4.5 m x 4.5 m
	250'		75 m
	600'		180 m
3.23	100'		30 m
3.24	5 - 10 ac		2 - 4 ha
3.26	4 - 10 ac		2 - 4 ha
4.3	100 ac		40 ha
	12'		4 m
	70'		21 m
4.4	300'		90 m
	5'		1.5 m
5.1	300'		90 m
	250'		75 m
	600'		180 m
5.6	65'		20 m